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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,774	06/08/2001	Javier A. Valenzuela	07389-00007	3929

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EXAMINER

CIRIC, LJILJANA V

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 10/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/877,774

Applicant(s)

VALENZUELA, JAVIER A.

Examiner

Ljiljana (Lil) V. Ciric *LVC*

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the first sentence repeats information given in the title. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 through 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For example, the limitations “a plurality of second manifolds formed in said core and extending substantially co-extensively, and located alternatingly across said width, with said plurality of first manifolds” [claim 1, lines 5-8] is unclear as written, thus rendering indefinite claim 1 and all claims depending therefrom. Do the second manifolds extend substantially co-extensively with each other or with the first manifolds or both? Does a plurality of second manifolds alternate with a plurality of first manifolds and so on across the width or do single second manifolds alternate with single first manifolds across the width to form a plurality of first manifolds and a plurality of second manifolds across the width?

The limitations “extending said length” [claim 12, lines 5 and 6; claim 16, lines 5 and 6; claim 19, lines 3 and 4; claim 28, lines 4, 5, and 6; claim 32, lines 4, 5, and 6; claim 33, lines 4 and 5; and, claim 36, lines 3 and 4] and “extending the length of the core” [claim 39, lines 6 and 7] are unclear as written. How is the former limitation, for example, differentiated from the limitation “extending along said length”, also appearing in the claims? If the limitations “extending along said length”, “extending said length”, and

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“extending the length” are used interchangeably, then recommend replacing the latter two limitations with “extending along said length” and “extending along the length” for improved consistency and clarity.

“Said second manifolds” [claim 17, line 7] should be replaced with “said plurality of second manifolds” for improved clarity and readability.

Claim 17 recites the limitation “said flow areas” in line 7 (two occurrences). There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. As best can be understood in view of the indefiniteness of the claims, claims 1, 3 through 8, 10, 19, 20, 22, 24 through 27, 33, 35, 36, 39, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen.

Nguyen discloses a heat exchanger and method of forming the same essentially as claimed, including: a core comprising a plurality of heat exchanger plates having a stacking axis extending along the length of the core [see Figure 4, for example], inlet/outlet manifold plates 11, 12, and 13 which form a plurality of manifolds and interconnecting channels; and, spacer plates 15.

The reference thus reads on the claims.

6. Alternately for claims 1, 3 through 6, 10, 19, 20, 22, 24 through 27, 33, 35, 36, 39, and 40 and as best can be understood in view of the indefiniteness of the claims, claims 1 through 6, 9, 10, 12 through 14, 19 through 30, and 33 through 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Chu et al.

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Chu et al. discloses a heat exchanger and method of forming the same essentially as claimed, including: a heat exchanger comprising a plurality of stacked plates forming the heat exchanger core or cold plate or heat sink 8 [see Figure 1, for example]; a plurality of first and second manifolds 172 and 178 or 170 and 180, each of manifolds 172 and 178 having a generally triangular cross-section [see Figure 3, for example]; interconnecting channels 170 and 180 or 64 formed within the core or heat sink 8 [also see Figure 3]; and a microelectronic device or module 80 in thermal communication with a heat transfer surface of the heat exchanger.

The reference thus reads on the claims.

7. Alternately for claims 1 through 5, 10, and 12 through 14, and as best can be understood in view of the indefiniteness of the claims, claims 1 through 5, 10, and 12 through 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Messina.

Messina discloses an electronic cooling system including a heat exchanger having a plurality of manifolds and interconnecting channels formed within the heat exchanger core, the heat exchanger core being in thermal communication with microelectronic devices or components 162.

The reference thus reads on the claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Alternately for claims 2, 9, 21, 23, 34, and 37 and as best can be understood in view of the indefiniteness of the claims, claims 2, 9, 11, 17, 18, 21, 23, 34, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen.

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As noted in greater detail above, Nguyen discloses a stacked plate heat exchanger essentially as claimed, but does not specifically disclose the number of first manifolds and that of second manifolds differing by one, nor the shape of the manifolds as being generally triangular, nor the relative volumes of the first and second manifolds. Nevertheless, absent a showing of unexpected results, changing the number or shape or relative size of various elements are obvious matters of design choice and are well within the purview of those skilled in the art, and therefore not inventive.

Thus, it would have been obvious to one skilled in the art at the time of invention to modify the stacked plate heat exchanger of Nguyen by, for example, changing the number of first manifolds relative to the number of second manifolds as well as by changing the shapes of the manifolds in order to achieve a particular heat transfer rate corresponding to a given coolant flow rate and pressure drop range through the heat exchanger.

10. Alternately and as best can be understood in view of the indefiniteness of the claims, claims 11, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al.

As noted in greater detail above, Chu et al. discloses a stacked plate heat exchanger essentially as claimed, but does not specifically disclose the relative volumes of the first and second manifolds. Nevertheless, absent a showing of unexpected results, changing the relative size or volume of various elements is an obvious matter of design choice and is well within the purview of those skilled in the art, and therefore not inventive. See *In re Rose*, 105 USPQ 237 (CCPA 1955).

Thus, it would have been obvious to one skilled in the art at the time of invention to modify the stacked plate heat exchanger of Chu et al. by, for example, changing the relative size or volume of the first manifolds as compared to the relative size or volume of the second manifolds in order to achieve a number of first manifolds relative to the number of second manifolds as well as by changing the shapes of the manifolds in order to achieve a particular heat transfer rate.

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11. Alternately and as best can be understood in view of the indefiniteness of the claims, claims 9, 11, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messina

As noted in greater detail above, Messina discloses an electronic cooling system including a heat exchanger essentially as claimed, except for not specifically disclosing the cross sectional shape of the first and second manifolds as being generally triangular and nor the relative volumes of the first and second manifolds as having a particular value. Nevertheless, absent a showing of unexpected results, changing the shape of various elements and/or changing the relative size or volume thereof are obvious matters of design choice and are well within the purview of those skilled in the art, and therefore not inventive.

Thus, it would have been obvious to one skilled in the art at the time of invention to modify the stacked plate heat exchanger of Messina by, for example, changing the relative size or volume of the first manifolds as compared to the relative size or volume of the second manifolds in order to achieve a number of first manifolds relative to the number of second manifolds as well as by changing the shapes of the manifolds in order to achieve a particular heat transfer rate through the heat exchanger corresponding to a particular desired coolant flow rate therethrough.

12. Alternately for claims 15 and 16 and as best can be understood in view of the indefiniteness of the claims, claims 15, 16, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. in view of Bonde.

As noted in greater detail above Chu et al. discloses the invention essentially as claimed, including a heat exchanger comprising a plurality of stacked plates forming the heat exchanger core or cold plate or heat sink 8 [see Figure 1, for example], as well as a plurality of first and second manifolds and interconnecting channels within the core, wherein an electronic device or module 80 is in thermal communication with the heat exchanger. While Chu et al. does not explicitly disclose a fluid recirculation system in fluid communication with the plurality of first and second manifolds, Chu et al. does suggest

the existence of an external recirculation system since it discloses a coolant supply hole 74 and a coolant return hole 76. Meanwhile, Bonde et al. teaches connecting a fluid or coolant recirculation system 64 to the inlet and outlet manifolds of a compact heat exchanger or heat sink 38, where the heat exchanger or heat sink 38 comprises a plurality of manifolds and interconnecting channels, in order to permit a specific coolant to circulate there through and thus enable the desired amount of heat transfer to occur.

Thus, it would have been obvious to one skilled in the art at the time of invention to modify the stacked plate heat exchanger of Chu et al. by specifically connecting the same to a coolant recirculation system as taught by Bonde et al. in order to enable the heat exchanger to achieve a particular desired heat transfer rate.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lapinski et al. and Dugan each discloses a stacked plate heat exchanger with plural manifolds.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ljiljana (Lil) V. Ciric whose telephone number is 703-308-3925. The examiner works a flexible schedule which varies from day to day and from week to week, but can normally be reached on most days during the week between the hours of 10:00 a.m. and 6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 703-308-0101. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3463 for regular communications and 703-305-3463 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

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LVC
LILJANA CIRIC
PATENT EXAMINER

LVC:th

October 14, 2002